

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-47

Name: Flat Creek Lake

County: Perkins

Legal description: Sec 20 & 21, T 21N, R 16E

Location from nearest town: 0.5 mi. west, 10 mi. south of Lemmon, SD

Dates of present survey: June 23-25, 2014

Date last surveyed: June 5-6, 2013

Management classification: Warmwater semi-permanent

Primary Species: (game and forage)

1. Black bullhead
2. Black crappie
3. Walleye
4. Northern pike
5. Yellow perch

Secondary and other species:

1. Channel catfish
2. Common carp
3. Golden shiner
4. Bluegill
5. Green sunfish

PHYSICAL CHARACTERISTICS

Surface Area: 203.4 acres

Watershed: 102,400 acres

Maximum depth: 24 feet

Mean depth: 7.9 feet

Lake elevation at survey (from known benchmark): full

Ownership of lake and adjacent lakeshore property:

Flat Creek Lake is divided by Highway 73. Approximately 50% of the shoreline is public and the rest is in private ownership. The south west side is owned by the South Dakota Game Fish and Parks (SDGFP) and lies within the Llewellyn Johns Recreation Area. The SDGFP obtained easements in 1934 that grants public access around the shoreline up to 12 feet above the high water mark.

Fishing Access:

Flat Creek Lake has poor access except along Highway 73 which bisects the lake. Other shoreline areas are overgrown with thick vegetation including large areas of poison ivy. Boat access is also poor. Small boats can be launched on the southwest corner of the east half of the lake at a break in the shoreline vegetation. This area has large amounts of poison ivy on both sides, so boat anglers need to be wary when on shore.

Observations of Water Quality and Aquatic Vegetation:

Cattails and bulrush surround most of the shoreline areas on both sides of the highway. Department personnel identified no pollution problems during the 2014 survey.

Observations on conditions of structures (i.e. spillway, boat ramps, docks, roads etc.)

The dam and spillway were not inspected by SDGFP personnel during the 2014 fisheries survey.

MANAGEMENT OBJECTIVES

- Objective 1.** Increase walleye density to produce and maintain a gill-net CPUE for stock-length walleye ≥ 10 , and a PSD range of 30-60.
- Objective 2.** Increase and maintain a moderate to high density of largemouth bass with PSD range between 20 and 40.
- Objective 3.** Maintain a mean trap net CPUE of stock-length black bullhead ≤ 100 and PSD between 30 and 60.

BIOLOGICAL DATA

Sampling Effort and Catch

A fisheries survey was completed on Flat Creek Lake on June 23-25, 2014. The survey consisted of four trap nets set overnight, sampled, and reset for a second night for a total of eight net nights. An experimental gill net was set overnight as well, sampled, and set for a second night for a total of two net nights. Trap nets were modified fyke nets consisting of a 1.3 X 1.5 m (4.2 ft X 4.9 ft) frame, 19.1 mm (0.75 in) mesh and a 1.2 X 23 m (3.9 X 75.5 ft) lead. The gill nets were experimental-type measuring 45.7 m (150 ft) long and 1.8 m (6 ft) deep with six 7.6 m (25 ft) panels with bar mesh sizes: 12.7 mm (0.5 in), 19.1 mm (0.75 in), 25.4 mm (1.0 in), 31.8 mm (1.25 in), 38.1 mm (1.5 in), and 50.8 mm (2.0 in).

A total of 592 fish were collected from the trap nets, and 205 fish from the gill nets. This included eight species (Tables 1 and 2). Recent fish stockings included walleye fingerlings, northern pike fry, largemouth bass fingerlings and yellow perch adults.

Table 1. Catch data from all fish species collected in eight trap nets in Flat Creek Lake, Perkins County, June 23-25, 2014. CPUE with 80% and PSD, PSD-P and Wr with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	$Wr \geq S$
Black bullhead	526	65.8 (24.6)	63.8 (23.6)	2 (1)	0	74.8 (1.1)
Common carp	24	3 (1.1)	2.9 (1.1)	9 (12)	0	81.5 (2.1)
Northern pike	21	2.6 (1.5)	2.6 (1.5)	100	81 (18)	87.9 (2.4)
Walleye	9	1.1 (0.8)	0.8 (0.5)	50 (50)	50 (50)	82.7 (6.90)
Black crappie	1	0.1 (0.2)	0.1 (0.2)	100	0	91.4 (--)
Yellow perch	10	1.3 (0.7)	1.3 (0.7)	10 (23)	0	75.8 (4.4)
Green sunfish	1	0.1 (0.2)	0.1 (0.2)	0	0	90.5 (--)

Table 2. Catch data from all fish species collected in two gill nets in Flat Creek Lake, Perkins County, June 23-25, 2014. CPUE with 80% confidence intervals in parentheses. PSD, PSD-P and Wr with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	$Wr \geq S$
Black bullhead	160	80 (92.3)	79 (92.3)	0	0	81.5 (1)
Common carp	35	17.5 (23.1)	17 (21.5)	0	0	81.6 (0.7)
Northern pike	5	2.5 (1.5)	2.5 (1.5)	100	80 (20)	95.7 (8)
Walleye	3	1.5 (1.5)	1	100	50 (50)	92.8 (116.8)
White sucker	2	1	1	50 (50)	0	78.7 (79.8)

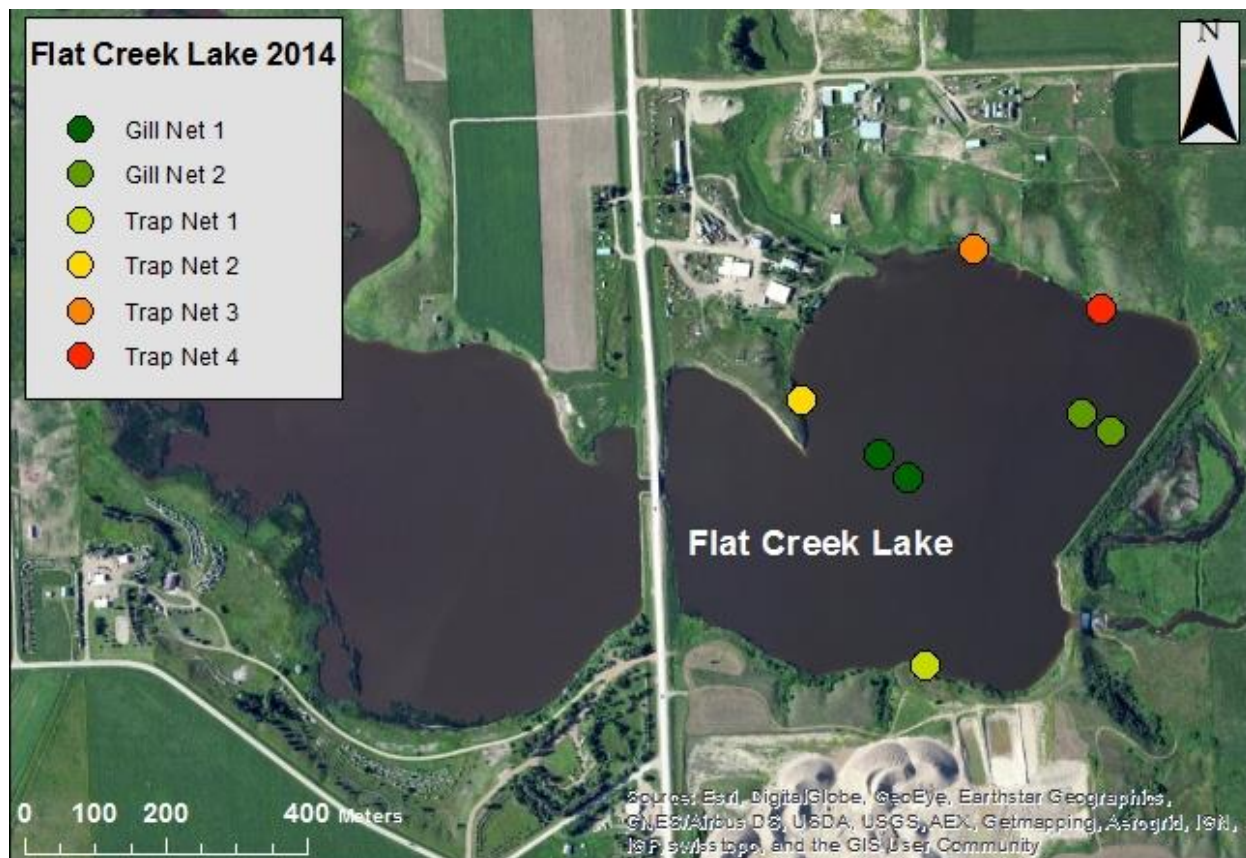


Figure 1. Locations of experimental gill nets and trap nets during the annual fishery survey of Flat Creek Lake, Perkins County, South Dakota, 2014.

Black bullhead

Black bullheads continue to be the most abundant fish species collected during the fishery surveys on Flat Creek Lake. Over the past four years the CPUE has ranged from 43 to 104 per trap net (Table 3). The PSD has varied slightly over the past four surveys with the low being 0 in 2010 to a high of 8 in 2012. The PSD was back down to 2 in 2014. Only in 2012, during the past four years, were any black bullheads collected over preferred length (12 inches), and that year the PSD-P was only 1. It appears that the growth of the large year class of black bullheads has slowed greatly in the last couple years with most of the fish being just longer than stock length (Figure 2). The $Wr \geq S$

has varied from a low of 75 in 2014 to a high of 87 in 2013. Management objectives are being met for CPUE-S as it has stayed less than 100. However, the management objective of a PSD of 30 to 60 is not being met.

Table 3. Composite listing of data for black bullhead collected by trap nets in Flat Creek Lake, 2010, 2012-2014. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and $W_r \geq S$ with 90% confidence intervals in parentheses.

Year	CPUE	PSD	PSD-P	$W_r \geq S$
2010	64.8 (20.3)	0	0	--
2012	42.8 (46.9)	8 (5)	1 (2)	79.7 (1.1)
2013	103.5 (51.2)	5 (2)	0	87.1 (1.3)
2014	65.8 (24.6)	2 (1)	0	74.8 (1.1)

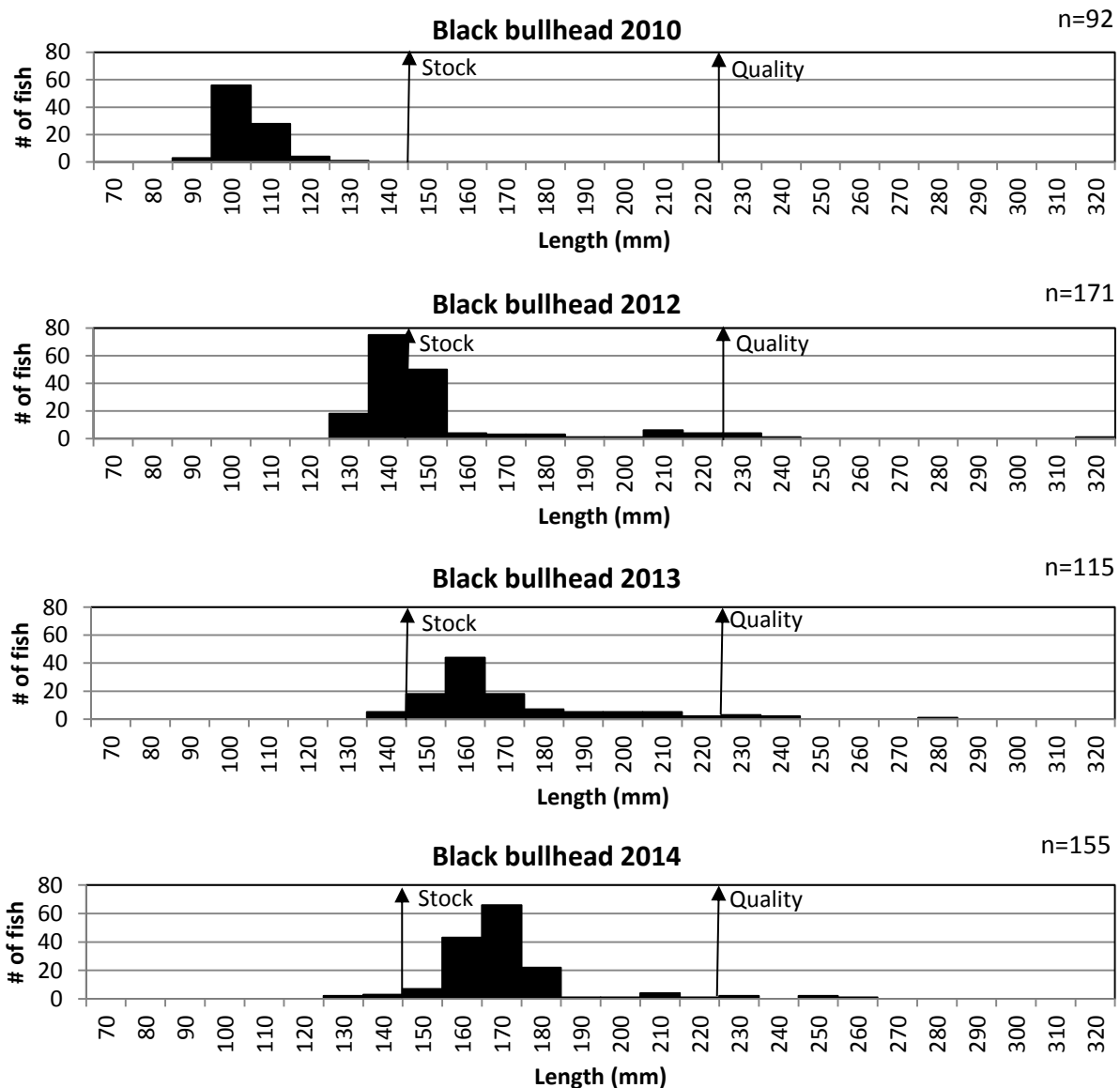


Figure 2. Length frequencies of black bullhead from trap nets in Flat Creek Lake 2010, 2012-2014.

Common carp

Common carp are the second most abundant fish species surveyed in Flat Creek Lake with 24 collected in the frame nets and 35 in the gill nets. The CPUE was 3 in the trap nets and 17 in the gill nets. There were only a few common carp in the sample over quality length (PSD=9; trap nets). There is a large year class of common carp that were just above stock length (11 inches) in 2014 after more than four years of growth (Figure 3).

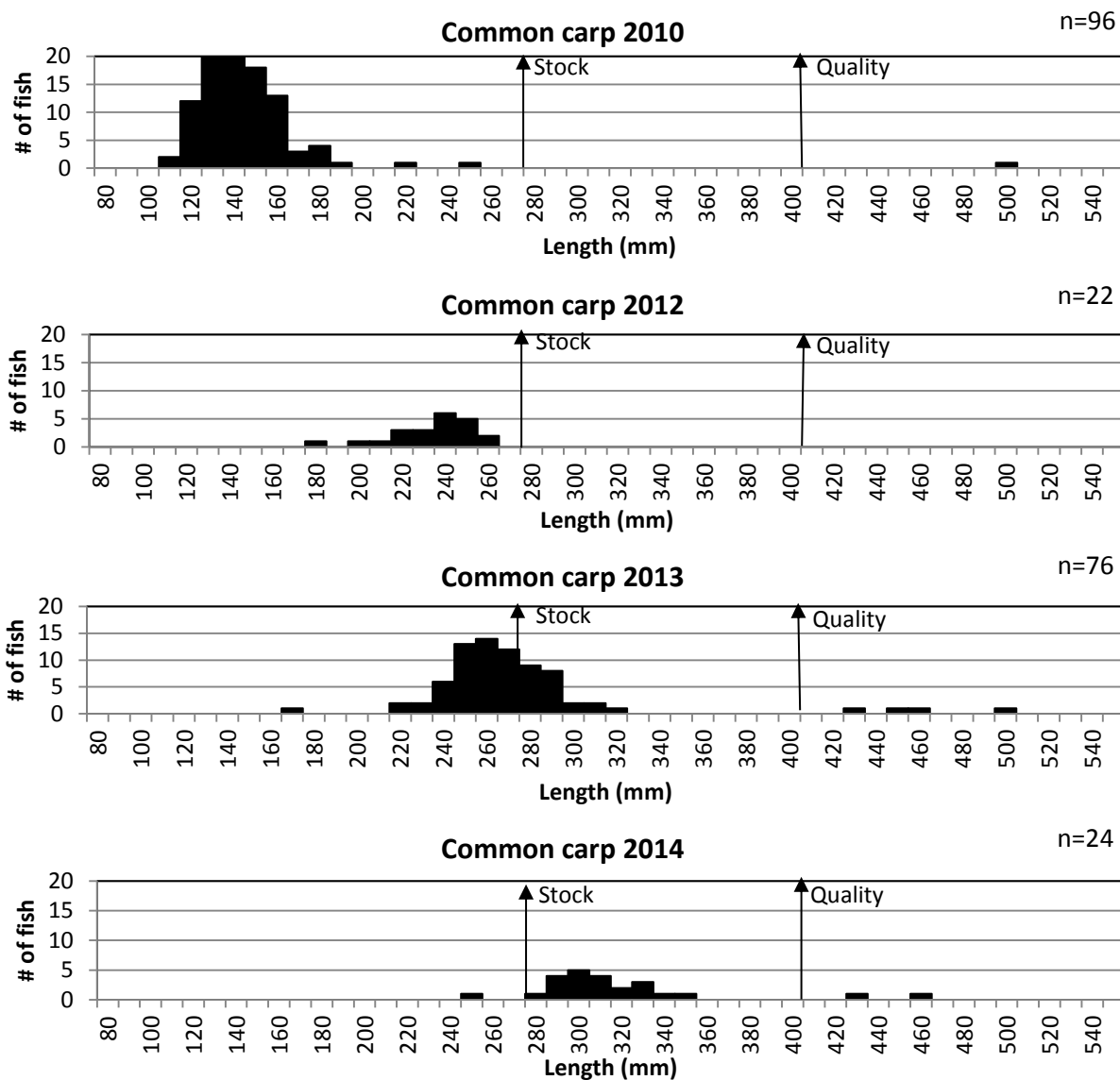


Figure 3. Length frequencies for common carp from trap nets in Flat Creek Lake, Perkins County, 2010, 2012-2014.

Northern pike

There was a good sample of northern pike in 2014 compared to previous surveys with five in the gill nets and 21 in the trap nets. All of the northern pike collected in 2014 were over quality

length (PSD=100) with a large portion over preferred length (PSD-P=81; trap nets) as well. There are northern pike exceeding memorable length (34 inches) in Flat Creek Lake with the largest fish collected in 2014 close to 36 inches and 10 pounds (Figure 4). Condition was good in 2014 for northern pike with the mean $Wr_{\geq S}$ being 88 and 96 in trap and gill nets, respectively.

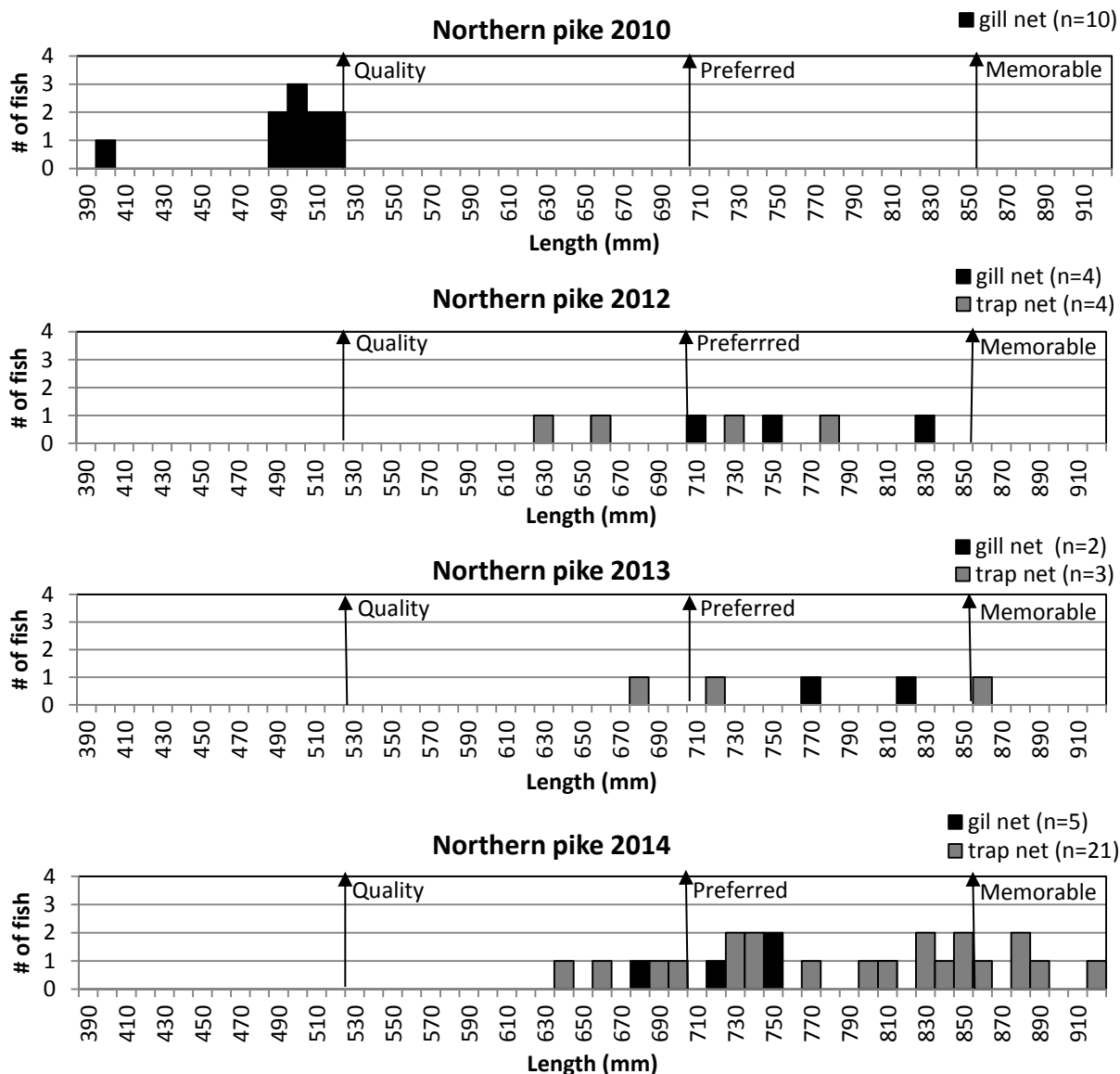


Figure 4. Length frequencies for northern pike from gill nets and trap nets in Flat Creek Lake, Perkins County, 2010, 2012-2014.

Walleye

Walleye catches have been sporadic over the past four surveys with the highest number of fish sampled in 2010 and the lowest number in 2013. There were a variety of walleyes sizes sampled in 2014 ranging from below stock length (10 inches) to over preferred length (20 inches) (Figure 5). This is to be expected as Flat Creek Lake has been stocked with walleye fingerlings four out of the last five years. The PSD and PSD-P for walleyes from the trap nets

was 50 and 50, respectively. Walleyes from the gill nets had a PSD of 100 and a PSD-P of 50. Condition was good with a mean $W_{r\geq S}$ of 83 and 93 in the trap and gill nets. Management objectives for walleye CPUE-S are not being met as the gill net CPUE-S is less than 10. The management objective for walleye PSD is being achieved; however, they have been small samples and the PSD values have had large confidence intervals.

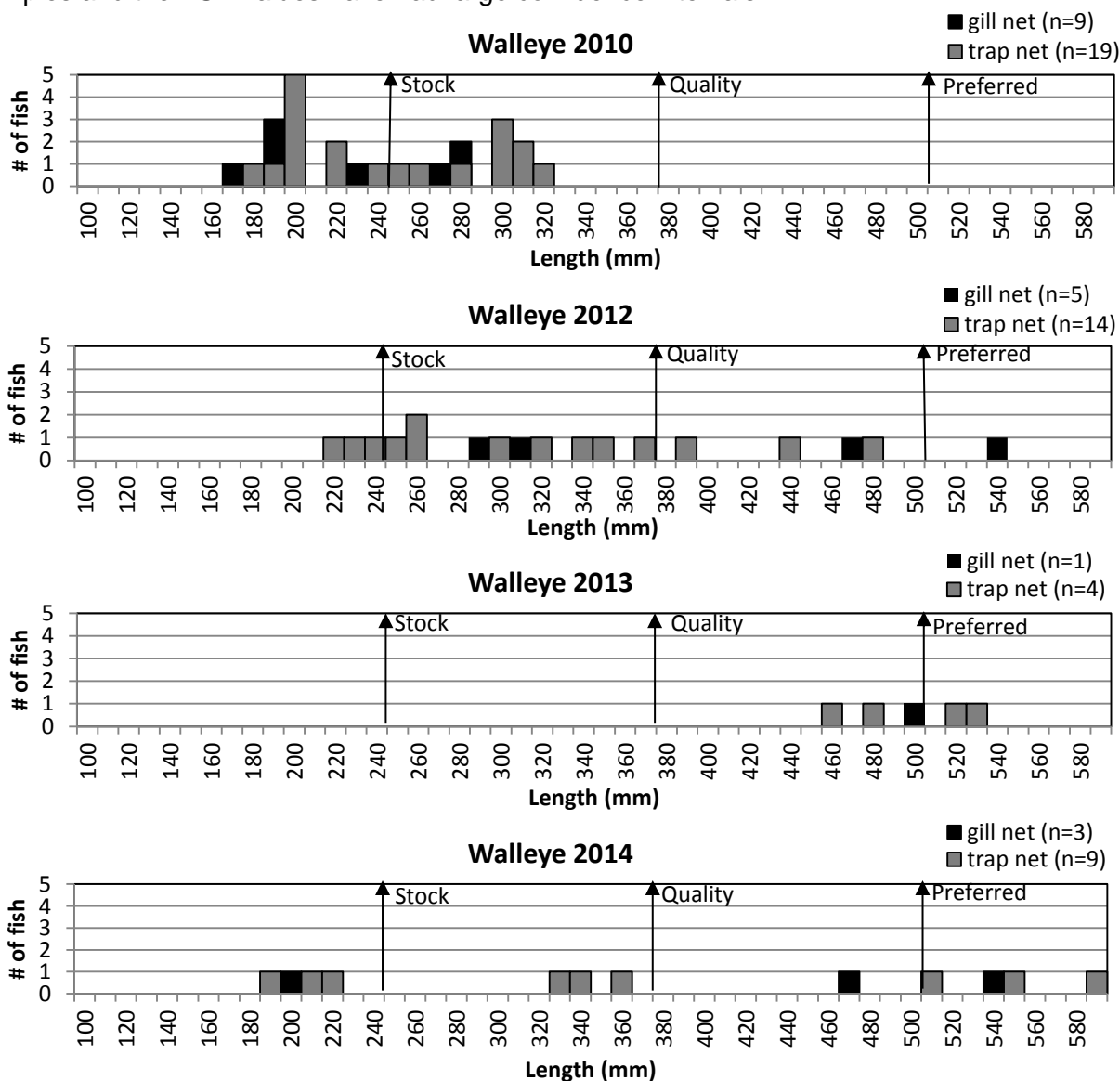


Figure 5. Length frequencies for walleye from trap nets and gill nets in Flat Creek Lake, Perkins County, 2010, 2012-2014.

Other fishes

Other fishes collected during the 2014 Flat Creek Lake survey were yellow perch (ten), black crappie (one), green sunfish (one), and white sucker (two). The only other fish species collected during the past four surveys was channel catfish. The yellow perch were all collected in the trap net sample and had a PSD of 10. Black crappie and bluegill had previously been present in Flat Creek Lake with high numbers of small fish.

RECOMMENDATIONS

1. If water levels are adequate in 2014, stock adult largemouth bass at a rate of 10 per acre to increase bass density and to help reduce black bullhead numbers and improve panfish quality.
2. Stock large, fall walleye fingerlings at a rate of 10 per acre, at least every other year in order to reach management objectives and to help reduce black bullhead and common carp numbers.
3. Trap and transfer white crappies from Shadehill Reservoir in attempt to add a panfish component to the lake.
4. Conduct a spring or fall electrofish survey to evaluate the largemouth bass populations/stocking success, and to attempt to get a better walleye sample.

APPENDIX

Appendix A. Stocking history, including year, number, species and size of fish for Flat Creek Lake, Perkins County, South Dakota, 2009-2014.

Year	Number	Species	Size
2009	46,625	Walleye	Fingerling
	1,000	Largemouth bass	Fingerling
2010	680	Yellow perch	Adult
	191,200	Northern pike	Fry
	20,000	Walleye	Fingerling
	1,000	Largemouth bass	Fingerling
2011	7,800	Largemouth bass	Fingerling
	30,000	Northern pike	Fry
	13,930	Walleye	Fingerling
2012	14,460	Largemouth bass	Fingerling
2013	4,000	Walleye	Large fingerling
2014	19,800	Walleye	Small fingerling
	100	Largemouth bass	Adult